

WHAT IS CLAIMED IS:

1. A mobile station that can communicate with a first and a second radio communication systems, the mobile station being characterized by comprising:

reception means for receiving a transmitted signal from at least one base station of said first radio communication system;

determination means for determining whether or not a point at which the signal has been received belongs to a cell that is a service area of the at least one base station of the first radio communication system; and

transmission means for transmitting a result of the determination by the determination means to the second radio communication system.

2. The mobile station according to Claim 1, characterized in that said determination means makes said determination on the basis of whether or not synchronization is established with a perch channel of the at least one base station of said first radio communication system.

3. A cell forming process apparatus characterized by comprising:

reception means for receiving, via a second radio communication system, a result of the determination of whether or not a mobile station that can communicate with

a first and said second radio communication systems belongs to a cell that is a service area of at least one base station of said first radio communication system as well as location information on said mobile station, the result
5 and the location information being transmitted by the mobile station;

selection means for selecting a base station for which a corresponding cell of said first radio communication system is to be changed; and

10 instruction means for instructing the base station selected by the selection means to change the cell thereof.

4. The cell forming process apparatus according to Claim 3, characterized in that said selection means includes
15 mapping means for mapping cell and non-cell areas relating to the at least one base station of said first radio communication system, on the basis of the result received by said reception means.

20 5. The cell forming process apparatus according to Claim 3, characterized in that said selection means includes calculation means for calculating a distance between the mobile station and the at least one base station of said first radio communication system on the basis of the
25 location information on said mobile station received by said reception means as well as location information on the at least one base station; and

means for selecting a base station that is closest to said mobile station, as a target the cell of which is to be changed, on the basis of a result of the calculation by the calculation means.

5

6. The cell forming process apparatus according to Claim 3, characterized in that said selection means selects a base station having the lowest utilization of radio resources, as the target the cell of which is to be changed.

10

7. The cell forming process apparatus according to Claim 3, characterized by further comprising accumulation means for accumulating the result therein which has been received by said reception means so that the result accumulated in said accumulation means can be supplied to the selection means.

15

8. The cell forming process apparatus according to Claim 4, characterized in that said selection means includes calculation means for calculating a distance between the mobile station and the at least one base station of said first radio communication system on the basis of the location information on said mobile station received by said reception means as well as location information on the at least one base station; and

20

25

means for selecting a base station that is closest to said mobile station, as a target the cell of which is

to be changed, on the basis of a result of the calculation by the calculation means.

9. The cell forming process apparatus according to Claim 4, characterized in that said selection means selects a base station having the lowest utilization of radio resources, as the target the cell of which is to be changed.

10. A cell control method for a cell control system comprising a mobile station that can communicate with a first and a second radio communication systems and a cell forming process apparatus for instructing a base station of said first radio communication system to change a cell thereof, the method being characterized in that:

said mobile station receives a transmitted signal from at least one base station of said first radio communication system, determines whether or not this receiving point belongs to a cell that is a service area of at least one base station of said first radio communication system, and

transmits a result of said determination to said cell forming process apparatus via said second radio communication system, and

said cell forming process apparatus selects a base station for which a corresponding cell of said first radio communication system is to be changed, on the basis of the determination result transmitted by said mobile station, location information retrieved when said mobile station

executes the determination process, and location information on the at least one base station of said first radio communication system, and

5 instructs said selected base station to change the cell thereof.

11. The cell control method according to Claim 10, characterized in that the location information on said mobile station is retrieved by said second radio
10 communication system.

12. The cell control method according to Claim 10, characterized in that the location information on said mobile station can be retrieved by the at least one base
15 station of said first radio communication system.

13. The cell control method according to Claim 10, characterized in that the location information on the at least one base station of said first radio communication
20 system is retrieved by said cell forming process apparatus on the basis of an identifier of the base station transmitted by said mobile station together with said determination result.

25 14. A cell control system comprising a mobile station that can communicate with a first and a second radio communication systems and a cell forming process apparatus

for instructing a base station of said first radio communication system to change a cell thereof, the system being characterized in that:

said mobile station comprises

5 reception means for receiving a transmitted signal from at least one base station of said first radio communication system;

determination means for determining whether or not a point at which the signal has been received belongs to
10 a cell that is a service area of the at least one base station of the first radio communication system; and

transmission means for transmitting a result of the determination by the determination means to the second radio communication system, and in that:

15 said cell forming process apparatus comprises:

reception means for receiving, via a second radio communication system, a result of the determination of whether or not a mobile station that can communicate with a first and said second radio communication systems belongs
20 to a cell that is a service area of at least one base station of said first radio communication system as well as location information on said mobile station, the result and the location information being transmitted by the mobile station;

25 selection means for selecting a base station for which a corresponding cell of said first radio communication system is to be changed; and

instruction means for instructing the base station selected by the selection means to change the cell thereof.

15. A cell control method of controlling a cell that is
5 a service area of each base station, the method being characterized by comprising:

a cell determining step of receiving signals from said base stations through particular channels and determining cells of said base stations depending on results of
10 synchronization;

a location information obtaining step of obtaining location information on a mobile terminal from a location information obtaining section;

a location information transmitting step of
15 transmitting results of the determination at said cell determining step and said location information to those of said base stations with which the mobile terminal can synchronize;

a distance calculating step of calculating distances
20 between said mobile terminal and said base stations by mapping the location of the mobile terminal on the basis of said location information transmitted at the location information transmitting step;

a selection step of selecting a base station that has
25 the shortest distance as calculated at said distance calculating step;

a change information transmitting step of

transmitting cell change information to said base station selected at the selection step; and

a change step of changing the cell of said base station on the basis of said cell change information transmitted
5 at the change information transmitting step.

16. The cell control method according to Claim 15, characterized by further comprising a storage step of storing said determination results and said location
10 information in a storage section, and in that:

said location information transmitting step can obtain said determination results and location information for those of said base stations with which the mobile terminal cannot synchronize, from said storage
15 section, and transmitting said results and said location information to those of said base stations with which the mobile terminal can synchronize.

17. The cell control method according to Claim 15,
20 characterized by further comprising a reference distance calculating step of calculating reference distances on the basis of transmission power from said base stations in advance, and in that:

said selection step can select from base stations
25 whose distances to the mobile terminal are shorter than said respective reference distances.

18. The cell control method according to Claim 15,
characterized by further comprising a utilization
calculating step of calculating utilization of said base
stations and a utilization transmitting step of
5 transmitting said utilization, and in that:

said selection step can select from base stations
having the lowest utilization as transmitted at said
utilization transmitting step.

10 19. The cell control method according to Claim 16,
characterized by further comprising a reference distance
calculating step of calculating reference distances on the
basis of transmission power from said base stations in
advance, and in that:

15 said selection step can select from base stations
whose distances to the mobile terminal are shorter than
said respective reference distances.

20 20. The cell control method according to Claim 16,
characterized by further comprising a utilization
calculating step of calculating utilization of said base
stations and a utilization transmitting step of
transmitting said utilization, and in that:

25 said selection step can select from base stations
having the lowest utilization as transmitted at said
utilization transmitting step.

21. A cell control system for controlling a cell that is a service area of each base station to change service areas of a mobile communication system, the system being characterized by comprising:

5 a mobile terminal including cell determining means for receiving signals from said base stations through particular channels and determining cells of said base stations depending on results of synchronization, location information obtaining means of obtaining
10 location information on a mobile terminal, and location information transmitting means for transmitting results of the determination by said cell determining means and said location information to those of said base stations with which the mobile terminal can synchronize; and

15 a cell control apparatus including a distance calculating means of calculating distances between said mobile terminal and said base stations by mapping the location of said mobile terminal on the basis of said location information transmitted by the location
20 information transmitting means, selection means for selecting a base station that has the shortest distance as calculated by said distance calculating means, and a change information transmitting means for transmitting cell change information to said base station selected by
25 the selection means, and in that:

said base station changes the cell thereof on the basis of said cell change information transmitted by said cell

control apparatus.

22. The cell control system according to Claim 21,
characterized in that said mobile terminal further
5 comprises storage means for storing said determination
results and said location information, and in that:

said location information transmitting means can
obtain said determination results and location
information for those of said base stations with which the
10 mobile terminal cannot synchronize, from said storage
section, and transmitting said results and said location
information to those of said base stations with which the
mobile terminal can synchronize.

23. The cell control system according to Claim 21,
characterized in that said cell control apparatus further
comprises reference distance calculating means for
calculating reference distances on the basis of
transmission power from the base stations in advance, and
20 in that:

said selection means selects from base stations whose
distances to the mobile terminal are shorter than said
respective reference distance.

24. The cell control system according to Claim 21,
characterized in that said base station comprises
utilization calculating means for calculating utilization

of the base stations and utilization transmitting means for transmitting said utilization, and in that:

said selection means can select from base stations having the lowest utilization as transmitted by said
5 utilization transmitting means.

25. The cell control system according to Claim 22, characterized in that said cell control apparatus further comprises reference distance calculating means for
10 calculating reference distances on the basis of transmission power from the base stations in advance, and in that:

said selection means selects from base stations whose distances to the mobile terminal are shorter than said
15 respective reference distance.

26. The cell control system according to Claim 22, characterized in that said base station comprises utilization calculating means for calculating utilization
20 of the base stations and utilization transmitting means for transmitting said utilization, and in that:

said selection means can select from base stations having the lowest utilization as transmitted by said utilization transmitting means.